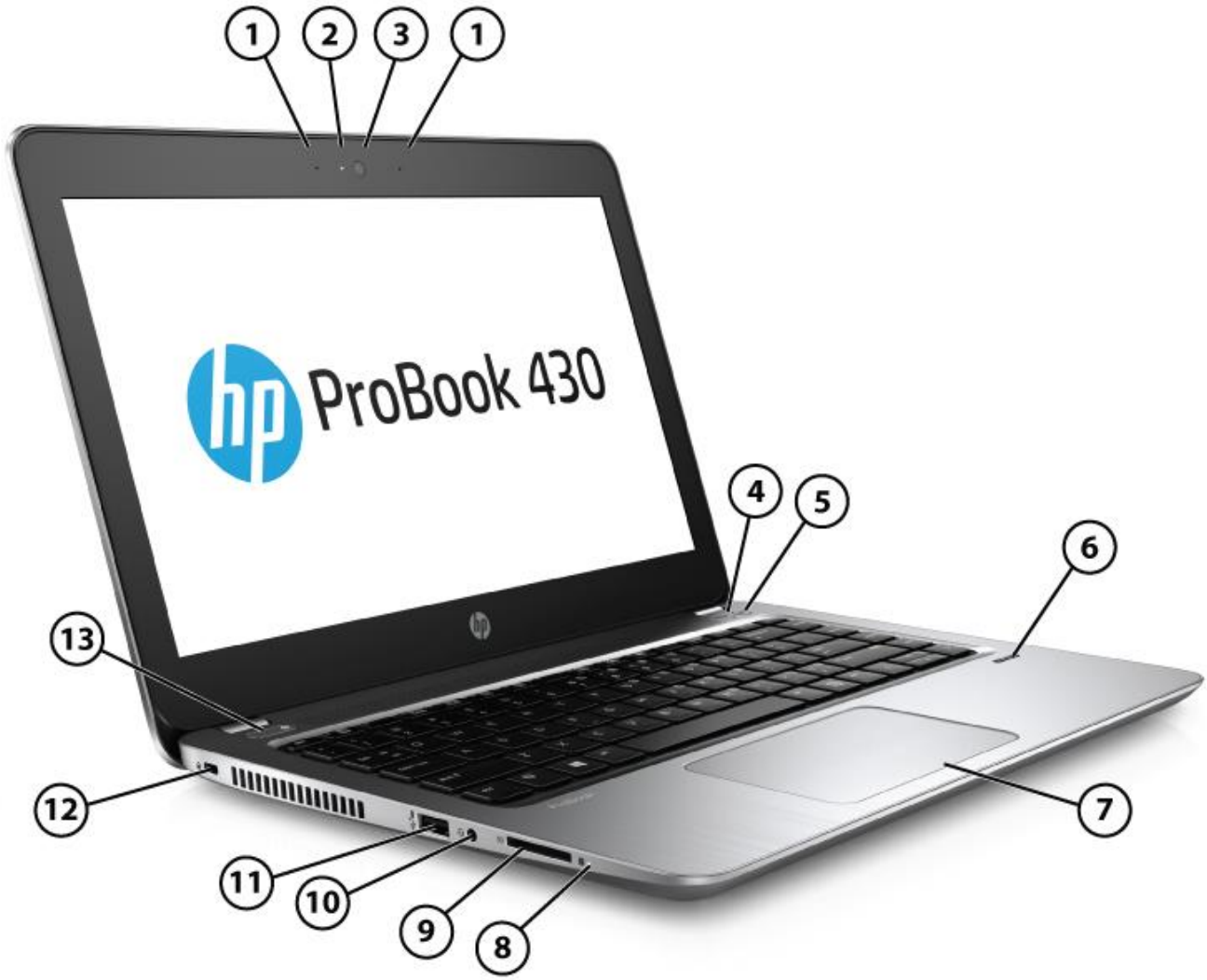
QuickSpecs

Overview

HP ProBook 430 G4 Notebook PC



Front

1. Microphones (2)
2. Webcam light
3. Webcam
4. Wireless on/off button
5. Speaker mute button
6. Fingerprint reader
7. Touchpad
8. Hard drive LED
9. SD Card reader
10. Headphone/Microphone combo jack
11. USB 2.0 port (power port)
12. Security lock slot
13. Power button

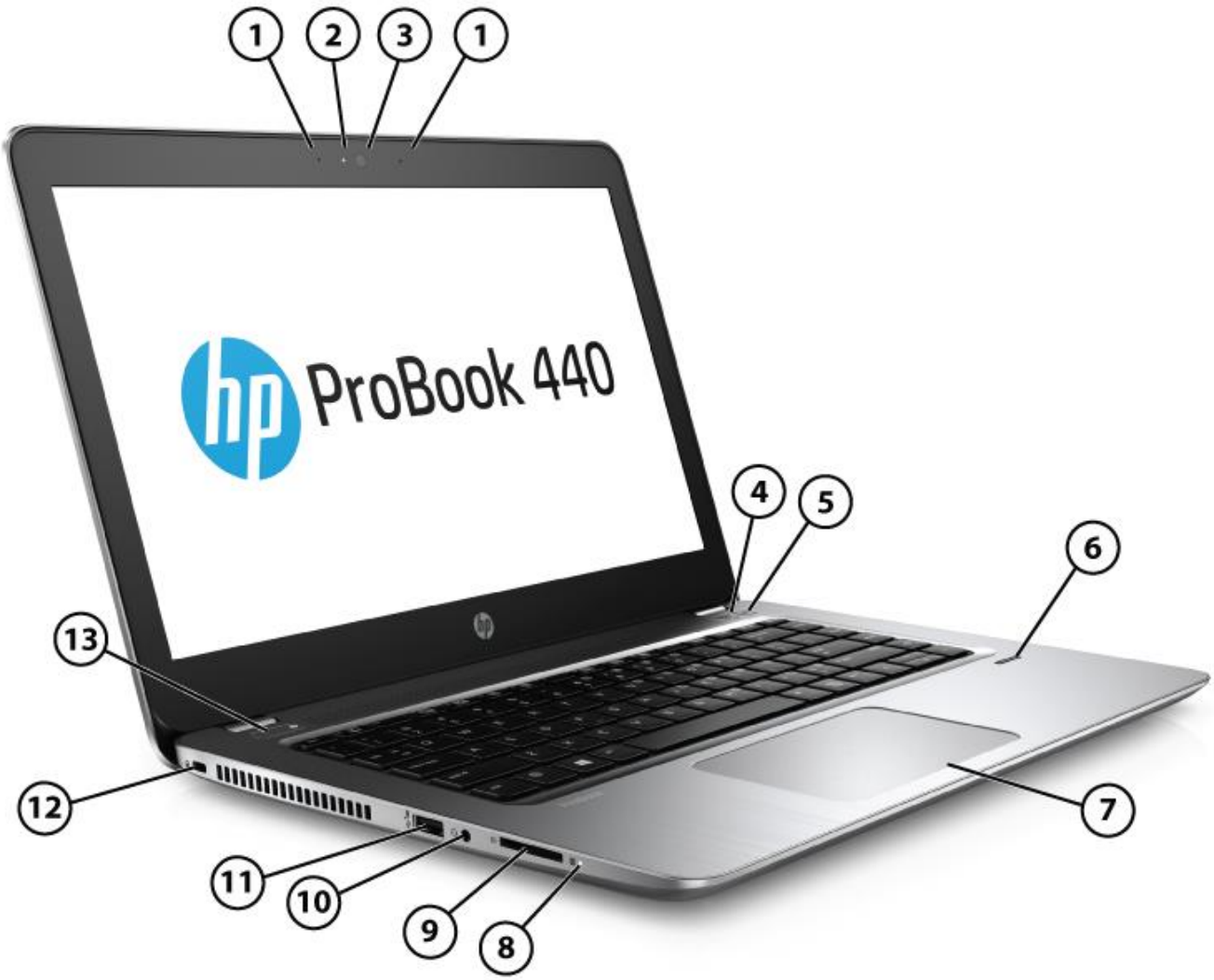
Overview

Rear

1. USB-C port
2. USB 3.0 port
3. HDMI port
4. External VGA monitor port
5. Ethernet port (RJ-45)
6. Power connector

Overview

HP ProBook 440 G4 Notebook PC



Front

1. Microphones (2)
2. Webcam light
3. Webcam
4. Wireless on/off button
5. Speaker mute button
6. Fingerprint reader
7. Touchpad
8. Hard drive LED
9. SD Card reader
10. Headphone/Microphone combo jack
11. USB 2.0 port (power port)
12. Security lock slot
13. Power button

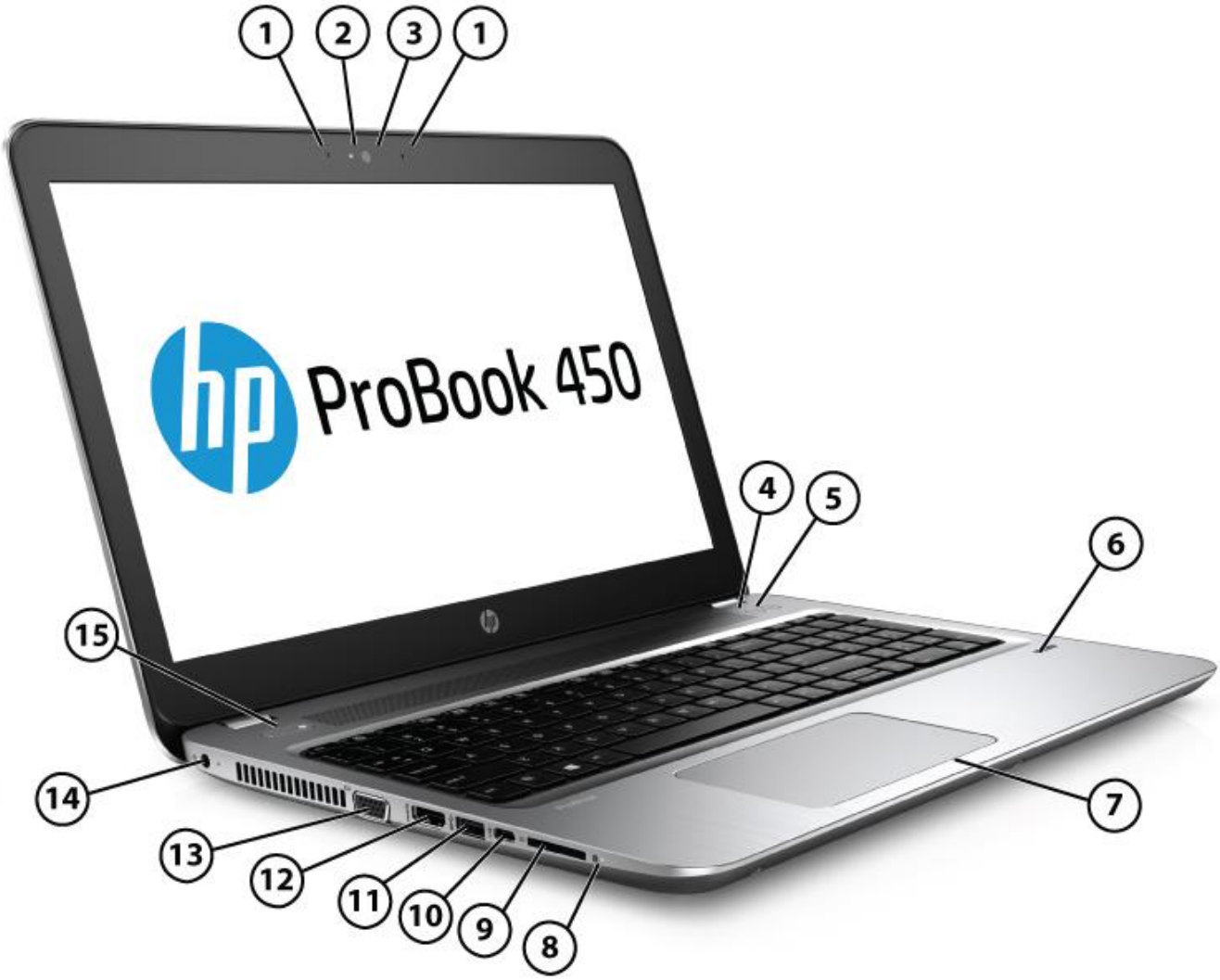
Overview

Rear

1. USB Type-C™ port
2. USB 3.0 port
3. HDMI port
4. External VGA monitor port
5. Ethernet port (RJ-45)
6. Power connector

Overview

HP ProBook 450 G4 Notebook PC



Front

1. Microphones (2)
2. Webcam light
3. Webcam
4. Wireless on/off button
5. Speaker mute button
6. Fingerprint reader
7. Touchpad
8. Hard drive LED
9. SD Card reader
10. USB-C port
11. USB 3.0 port
12. HDMI port
13. External VGA monitor port
14. Power connector
15. Power button

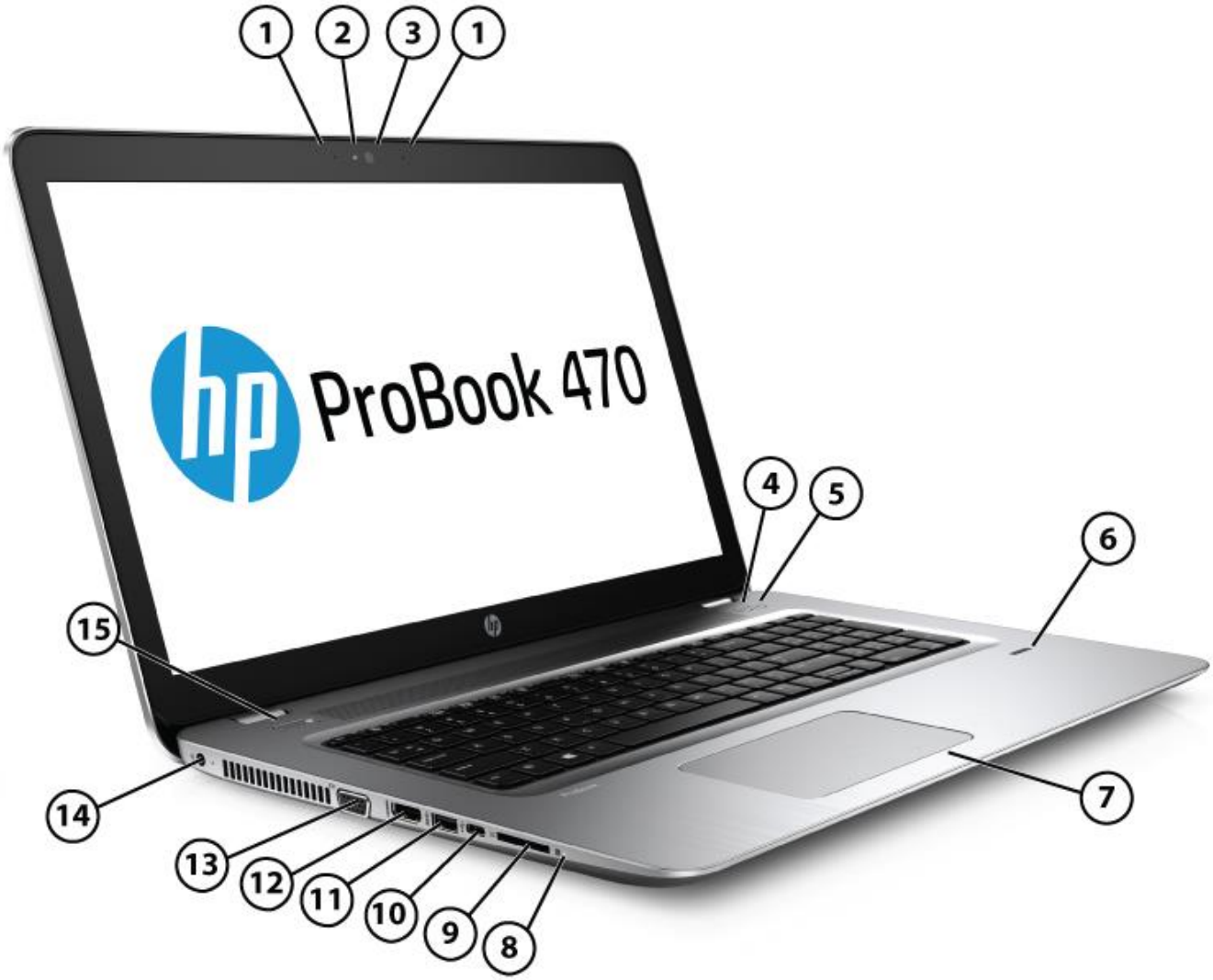
Overview

Rear

1. Optical drive
2. Headphone/Microphone combo jack
3. USB 2.0 ports (2)
4. Ethernet port (RJ-45)
5. Security lock slot

Overview

HP ProBook 470 G4 Notebook PC



Front

1. Microphones (2)
2. Webcam light
3. Webcam
4. Wireless on/off button
5. Speaker mute button
6. Fingerprint reader
7. Touchpad
8. Hard drive LED
9. SD Card reader
10. USB-C port
11. USB 3.0 port
12. HDMI port
13. External VGA monitor port
14. Power connector
15. Power button

Overview

Right

1. Optical drive
2. Headphone/Microphone combo jack
3. USB 2.0 ports (2)
4. Ethernet port (RJ-45)
5. Security lock slot

Overview

At a Glance

1. Windows 10 or FreeDOS 2.0
2. Choice of Intel® Core™ processors
3. Full size HP Premium Keyboard, spill-resistant keyboard with a thin layer of Mylar film to prevent minor spills; full separate numeric keypad (on 450/470 only)
4. Separate launch buttons provide easy access to wireless on/off and speaker mute.
5. Function keys provide control of features including: standby mode, display brightness, external display, microphone mute, volume down, volume up, and backlight toggle for backlit keyboard (select models only).
6. Large Clickpad with gestures support
7. Enhanced security features with preinstalled software and hardware options
8. Optional HD webcam with dual-microphone array for video conferencing
9. HDMI port for connecting to high-resolution displays
10. Choice of displays
    - **HP ProBook 430 G4**
    - 13.3" diagonal Full HD anti-glare Ultraslim LED-backlit (1920 x 1080) Non-Touch
    - 13.3" diagonal HD anti-glare Slim LED-backlit (1366 x 768) Non-Touch
    - 13.3” diagonal HD Slim LED-backlit (1366 x 768) Touch
    - **HP ProBook 440 G4**
    - 14" diagonal Full HD anti-glare slim LED-backlit (1920 x 1080) Non-Touch
    - 14" diagonal HD anti-glare Slim LED-backlit (1366 x 768) Non-Touch
    - 14” diagonal HD Slim LED-backlit (1366 x 768) Touch
    - **HP ProBook 450 G4**
    - 15.6" diagonal Full HD anti-glare slim LED-backlit (1920 x 1080) Non-Touch
    - 15.6" diagonal HD anti-glare Slim LED-backlit (1366 x 768) Non-Touch
    - 15.6" diagonal HD Slim LED-backlit touch screen (1366 x 768) Touch
    - **HP ProBook 470 G4**
    - 17.3" diagonal Full HD anti-glare flat LED backlit (1920 x 1080) Non-Touch
    - 17.3" diagonal HD+ anti-glare flat LED backlit (1600 x 900) Non-Touch
11. Flexible wireless connectivity options
12. Battery life
    - **HP ProBook 430 G4** up to 16hrs (SSD), or 13hrs (HDD)
    - **HP ProBook 440 G4** up to 15hrs 30mins (SSD), or 12hrs 30mins (HDD)
    - **HP ProBook 450 G4** up to 14hrs 15mins (SSD), or 12hrs (HDD)
    - **HP ProBook 470 G4** up to 12hrs 45mins (SSD), or 11hrs (HDD)
13. HP 3-cell, 48 WHr Li-ion battery
14. Passed MIL-STD testing[1]

1. MIL STD 810G testing was not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Features

PRODUCT NAMES

HP ProBook 430 G4 Notebook PC
HP ProBook 440 G4 Notebook PC
HP ProBook 450 G4 Notebook PC
HP ProBook 470 G4 Notebook PC

OPERATING SYSTEMS

Preinstalled	Windows 10 Pro 64[1] Windows 10 Pro (National Academic only) [1] Windows 10 Home 64[1] Windows 10 Home Single Language 64[1] Windows 10 Home 64 (National Academic only) [1] FreeDOS 2.0
Web only support	Windows 10 Pro 64[1] Windows 10 Home 64[1] Windows 10 Enterprise 64[1]

NOTE: In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on http://www.support.hp.com.

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.microsoft.com.

Features

PROCESSORS

HP ProBook 430 G4
Intel® Core™ i3-7100U Intel® HD Graphics 620 (2.4GHz, 3MB L3 Cache, 2 core)[1,2]
Intel® Core™ i5-7200U Intel® HD Graphics 620 (2.5GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3MB L3 Cache, 2 core) [1,2]
Intel® Core™ i5-7300U Intel® HD Graphics 620 (2.6GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 3MB L3 Cache, 2 core) [1,2]
Intel® Core™ i7-7500U Intel® HD graphics 620 (2.7GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 4MB L3 Cache, 2 core) [1,2]
Intel® Pentium® 4415U with Intel® HD Graphics (2.3 GHz, 2 MB cache, 2 cores) [1,2]
Intel® Celeron® 3865U with Intel® HD Graphics (1.8 GHz, 2 MB cache, 2 cores) [1,2]

HP ProBook 440 G4
Intel® Core™ i3-7100U Intel® HD Graphics 620 (2.4GHz, 3MB L3 Cache, 2 core)[1,2]
Intel® Core™ i5-7200U Intel® HD Graphics 620 (2.5GHz, up to 3.1 GHz with Intel Turbo Boost Technology 3MB L3 Cache, 2 core) [1,2]
Intel® Core™ i5-7300U Intel® HD Graphics 620 (2.6GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 3MB L3 Cache, 2 core) [1,2]
Intel® Core™ i7-7500U Intel® HD graphics 620 (2.7GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 4MB L3 Cache, 2 core) [1,2]
Intel® Pentium® 4415U with Intel® HD Graphics (2.3 GHz, 2 MB cache, 2 cores) [1,2]
Intel® Celeron® 3865U with Intel® HD Graphics (1.8 GHz, 2 MB cache, 2 cores) [1,2]

HP ProBook 450 G4
Intel® Core™ i3-6006U Intel® HD Graphics 520 (2.0GHz, 3MB L3 Cache, 2 core)[1,2]
Intel® Core™ i3-7100U Intel® HD Graphics 620 (2.4GHz, 3MB L3 Cache, 2 core)[1,2]
Intel® Core™ i5-7200U Intel® HD Graphics 620 (2.5GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3MB L3 Cache, 2 core) [1,2]
Intel® Core™ i7-7500U Intel® HD graphics 620 (2.7GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 4MB L3 Cache, 2 core) [1,2]
Intel® Pentium® 4415U with Intel® HD Graphics (2.3 GHz, 2 MB cache, 2 cores) [1,2]
Intel® Celeron® 3865U with Intel® HD Graphics (1.8 GHz, 2 MB cache, 2 cores) [1,2]

HP ProBook 470 G4
Intel® Core™ i3-7100U Intel® HD Graphics 620 (2.4GHz, 3MB L3 Cache, 2 core)[1,2]
Intel® Core™ i5-7200U Intel® HD Graphics 620 (2.5GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3MB L3 Cache, 2 core) [1,2]
Intel® Core™ i7-7500U Intel® HD graphics 620 (2.7GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 4MB L3 Cache, 2 core) [1,2]

Processors Family
6th Generation Intel® Core™ i3 processor (i3-6006U model)
7th Generation Intel® Core™ i3 processor (i3-7100U model)
7th Generation Intel® Core™ i3 processor (i3-6006U, i3-7100U, models)
7th Generation Intel® Core™ i5 processor (i5-7200U, i5-7300U models)
7th Generation Intel® Core™ i7 processor (i7-7500U model)
7th Generation Intel® Pentium® processor (4415U model)
7th Generation Intel® Celeron® processor (3864U model)

NOTE: In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on http://www.support.hp.com.

Features

Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

1. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
2. HD content required to view HD images.

CHIPSET

Integrated with processor

GRAPHICS

Integrated
HP ProBook 430/440/450
Intel® HD Graphics 620[1]

Note: View processor section for details.

Discrete[2]
HP ProBook 440/450/470
NVIDIA® GeForce® 930MX (2GB DDR3 dedicated, switchable)
1. HD content required to view HD images.

2.NVIDIA® Optimus™ technology requires an Intel processor, plus an NVIDIA® GeForce® discrete graphics configuration and is available on Windows 10 Professional OS. With NVIDIA® Optimus™ technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

DISPLAYS

HP ProBook 430 G4
Internal
Non-Touch
33.7 cm (13.3") diagonal HD[1] anti-glare LED-backlit (1366 x 768)
33.7 cm (13.3") diagonal FHD[1] anti-glare LED-backlit (1920 x 1080)

Touch
33.78 cm (13.3") diagonal HD[1] touch screen (1366 x 768)
NOTE: Only available with Windows 10.

External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @60 Hz

Features

HDMI
Supports direct connection to high-definition displays with up to 4096 x 2160 @24 Hz resolution and 7-channel audio with one convenient cable (Cable not included)

HP ProBook 440 G4
Internal
Non-Touch
35.5 cm (14") diagonal HD[1] anti-glare LED-backlit (1366 x 768)
35.5 cm (14") diagonal FHD[1] anti-glare LED-backlit (1920 x 1080)

Touch
35.56 cm (14") diagonal HD[1] touch screen (1366 x 768)

NOTE: Only available with Windows 10.

External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @60 Hz
HDMI
Supports direct connection to high-definition displays with up to 4096 x 2160 @24 Hz resolution and 7-channel audio with one convenient cable (Cable not included.)

HP ProBook 450 G4
Internal
Non-Touch
39.6 cm (15.6") diagonal HD[1] anti-glare LED-backlit (1366 x 768)
39.6 cm (15.6") diagonal FHD[1] anti-glare LED-backlit (1920 x 1080)

Touch
39.6 cm (15.6") diagonal HD[1] touch screen (1366 x 768)

External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @ 60 Hz
HDMI
Supports direct connection to high-definition displays with up to 4096 x 2160 @24 Hz resolution and 7-channel audio with one convenient cable (not included)

HP ProBook 470 G4
Internal
Non-Touch
43.9 cm (17.3") diagonal HD+[1] anti-glare LED-backlit (1600 x 900)
43.9 cm (17.3") diagonal FHD[1] anti-glare LED-backlit (1920 x 1080)

External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048x1536 external resolution @ 60 Hz
HDMI
Supports direct connection to high-definition displays with up to 4096 x 2160 @24 Hz resolution and 7-channel audio with one convenient cable (not included)

Features

1. HD content required to view HD images.
NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Features

STORAGE AND DRIVES

HP ProBook 430 and 440 G4
Hard Drives
Supports SATA, 7mm, 2.5" Hard Drives
500 GB - 5400 RPM Hard Drive
500 GB - 7200 RPM Hard Drive
500 GB – SSHD (hybrid) (8 GB Cache)
1 TB - 5400 RPM Hard Drive

Mini Card Solid State Drive
M.2 (NGFF) 2280 Solid State Drive
128 GB SATA-3 Value Solid State Drive
256 GB SATA-3 Value Solid State Drive

HP ProBook 450 and 470 G4
Hard Drives
Supports SATA, 7mm/9.5mm, 2.5" Hard Drives
500 GB (5400 rpm) Hard Drive
500 GB (5400 rpm) SSHD (Hybrid) (8 GB Cache)
500 GB (7200) rpm Hard Drive
1 TB (5400 rpm) Hard Drive
2 TB (5400 rpm) Hard Drive

Mini Card Solid State Drive
M.2 (NGFF) 2280 Solid State Drive
128 GB SATA-3 Value Solid State Drive
256 GB SATA-3 Value Solid State Drive

Dual Solid State Drive
256 GB + 256 GB SATA-3 Value Solid State Drive

HP 3D DriveGuard (Windows only)
The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive

NOTE: For Solid State Drives or Hard Drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

Features

OPTICAL DRIVES

HP ProBook 430 and 440
External
Support Optional[1] External USB Drive CD/DVD R/RW

HP ProBook 450[3] and 470[3]
Fixed Optional[1] Optical Drive
9.0 mm SATA:
DVD-ROM[1]
DVD+/-RW SuperMulti DL Drive[1,2]

Weight saver[3]

1. Sold separately as an optional feature,
2. For Blu-ray drives, certain disc, digital connection, compatibility and/or performance issues may arise, and do not constitute defects in the product. Flawless playback on all systems is not guaranteed. In order for some Blu-ray titles to play, they may require an HDMI digital connection and your display may require HDCP support. HD-DVD disks cannot be played on this drive. Note that DVD-RAM cannot read or write to 2.6 GB Single Sided/5.2 GB Double Sided – Version 1.0 media. Actual speeds may vary. Don't copy copyright-protected materials. Double Layer discs can store more data than single layer discs; discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.
3. No Optical option (weight saver) supported

MEMORY

Two SODIMM slots:
Both slots are customer accessible / upgradeable
DDR4 PC4 SODIMMS, system runs at 2133
Supports Dual Channel Memory

Standard
4 GB Total System Memory (4 GB x 1)
8 GB Total System Memory (4 GB x 2) (Dual Channel)
8 GB Total System Memory (8 GB x 1)
12 GB Total System Memory (8 GB + 4 GB) (Dual Channel)
16 GB Total System Memory (8 GB x 2) (Dual Channel)

Maximum
Up to 16 GB (8GBx2)

Dual-channel
Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. With Windows Starter 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Features

NETWORKING/COMMUNICATIONS

HP ProBook 430
Broadband Wireless (WWAN)[1,2]
HP lt4132 LTE/HSPA+ 4G Mobile Broadband[3]

Wireless LAN (WLAN) [1,2]
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3168 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.2 Combo
Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)
Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)

HP ProBook 440 G4
Broadband Wireless (WWAN)[1,2]
HP lt4132 LTE/HSPA+ 4G Mobile Broadband[3]

Wireless LAN (WLAN) [1,2]
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3168 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.2 Combo
Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)
Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)

HP ProBook 450 G4
Broadband Wireless (WWAN) [1,2]
HP lt4132 LTE/HSPA+ 4G Mobile Broadband[3]

Wireless LAN (WLAN) [1]
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3168 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.2 Combo
Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)
Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)

HP ProBook 470 G4
Wireless LAN (WLAN) [1,2]
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3168 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.2 Combo
Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)
Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
2. Sold separately or as an optional feature.
3. Mobile Broadband requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

Communications
Realtek RTL8111HSH (10/100/1000)

Features

NOTE: The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

AUDIO/MULTIMEDIA

Audio
Two stereo speakers
Integrated microphone (dual-microphone array when equipped with optional webcam)
Headphone/microphone combo jack

Webcam
Optional[1] 720p HD[2] webcam[3]

1. Sold separately as an optional feature.
2. HD content required to view HD images.
3. Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

HP Premium Keyboard
The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available.
NOTE 1: Includes a separate numeric keypad (HP ProBook 450 and 470 only.)
NOTE 2: Backlit keyboard available as an option.

Buttons and Function Keys
Separate launch buttons provide easy access to wireless on/off and speaker mute. Function keys provide control of features including: standby mode, display brightness, external display, microphone mute, volume down, volume up, and backlight toggle for backlit keyboard (select models only).

Function Keys
ESC: system information
F1 - Sleep
F2 - Blank
F3 - Backlight Toggle (for backlit keyboard) or Blank
F4 - Display Switching
F5 - Brightness Down
F6 - Brightness Up
F7 - Blank
F8 - Volume Down
F9 - Volume Up
F10 - Mic Mute
F11 - Blank

Features

F12 – NumLock (430/440); Blank (450/470)

Hidden Fuctions
o Fn+R = Break
o Fn+S = Sys Rq
o Fn+C = Scroll Lock

Pointing Devices
Clickpad with gestures support, two-way scroll

Touchpad
Taps enabled as default

Gestures
Enabled by default Win 10
2 Finger Scrolling
2 Finger Zoom (Pinch)
OSD (enable/disable)
3 finger tap = Cortana
3 finger flick = App switch
4 finger tap = Action Center

Disabled by default Win 10
3 Finger Flick
2 Finger Rotate
Momentum Motion
1 Finger Vertical Scroll

SOFTWARE AND SECURITY

BIOS

HP BIOSphere[1]
HP DriveLock | HP Automatic DriveLock
HP BIOS Protection[2]
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Pre-Boot Security
Secure Erase[3]
Hybrid Boot
Measure Boot
Secure Boot
Absolute Persistence Module[4]

Multi Media

Cyberlink Power Media Player[12]
Native Miracast Support[5]

Features

Communication

HP Mobile Connect[6,11]

HP Value Add Software

HP 3D DriveGuard
HP ePrint Driver[7]
HP Hotkey Support
HP Recovery Manager
HP Support Assistant

Microsoft Products

Buy Office
Bing Search
Certified for Skype for Business[8]

Manageability

HP Driver Packs[9]
HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM)[9]
HP BIOS Config Utility (BCU)[9]
HP Client Catalog[9]
HP CIK for Microsoft SCCM[9]
LANDESK Management[10]

For more information on HP Client Management Solutions, refer to: http://www.hp.com/go/clientmanagement.

Client Security Software

HP Security Manager
Microsoft Defender

Standard

TPM 2.0 (1.2 optional)
HP Fingerprint Reader
Security lock slot
Pre-boot Authentication

For more information on HP Client Security Software Suite, refer to http://www.hp.com/go/clientsecurity.

1 Available only on business PCs with HP BIOS. HP BIOSphere features may vary depending on the PC platform & configuration.
2 May require a manual recovery step if all copies of BIOS are compromised or deleted. BIOS adheres to NIST SP800-147.
3 For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
4 Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/ computrace-agreement. Data Delete is an optional service

Features

provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

5 Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast

6 HP Mobile Connect is only available on preconfigured devices with WWAN. For geographic availability refer to http://www.hp.com/go/mobileconnect

7 Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see http://www.hp.com/go/eprintcenter). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.

8 Skype is not offered in China.

9 Not preinstalled, however available on manageability website.

10 Subscription required.

11 Not supported in HP ProBook 470 G4

12 Not supported in HP ProBook 430 and 440 G4. Only available with optical drive.

Features

POWER

Power Supply
HP ProBook 430

45 W Smart AC adapter
45 W Smart AC adapter 2-prong (Japan only)
65 W EM Smart AC adapter (China and India only)

HP ProBook 440 /450 G4
45 W Smart AC adapter
45 W Smart AC adapter 2-prong (Japan only)
65 W Smart AC adapter
65 W EM Smart AC adapter (China and India only)

HP ProBook 470 G4
65 W Smart AC adapter
65 W EM Smart AC adapter (PRC and India only)

Battery
HP 3-cell, Long Life 48 WHr Li-ion
NOTE: Battery is internal and not replaceable by customer.

Battery life[1]

Platform	Other HW Details	Battery	SSD	HDD
HP Probook 430 G4	Optimal SKU	3 cell (48Whr)	Up to 16 hrs	Up to 13 hrs and 15 mins
HP Probook 440 G4	Optimal SKU	3 cell (48Whr)	Up to 15 hrs and 30 mins	Up to 12 hrs and 30 mins
HP Probook 450 G4	Optimal SKU	3 cell (48Whr)	Up to 14 hrs and 15 mins	Up to 12 hrs
HP Probook 470 G4	Optimal SKU	3 cell (48Whr)	Up to 12 hrs and 45 mins	Up to 11 hrs

1. Windows 10/MM14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See http://www.bapco.com for additional details

WEIGHTS & DIMENSIONS

HP ProBook 430 G4
Weight
Starting at 1.49 kg (3.28 lbs)
Dimensions (w x d x h)
Non-Touch
33 x 23.35 x 1.98 cm (front to rear)
12.99 x 9.19 x 0.78 in (front to rear)
Touch
33.02 x 23.38 x 2.13 cm
13 x 9.20 x 0.84 in

HP ProBook 440 G4

Features

Weight
Starting at 1.64 kg (3.61 lbs)
Dimensions (w x d x h)
Non-Touch
34.32 x 23.90 x 2.03 cm
13.51 x 9.41 x 0.80 in

Touch
34.34 x 23.94 x 2.19 cm
13.52 x 9.43 x 0.86 in

HP ProBook 450 G4
Weight
Starting at 2.04 kg (4.49 lbs)
Dimensions (w x d x h)
Non-Touch
38.20 x 26.30 x 2.44 cm
15.04 x 10.35 x 0.96 in

Touch
38.22 x 26.35 x 2.61 cm
15.05 x 10.37 x 1.03 in

HP ProBook 470 G4
Weight
Starting at 2.63 kg (5.79 lbs)
Dimensions (w x d x h)
Non-Touch
41.68 x 28 x 2.58 cm
16.41 x 11.02 x 1.02 in

NOTE: Height varies depending upon where on the notebook the measurement is made.
Weight varies by configuration and components.

PORTS/SLOTS

Ports
430/440
1 USB 3.0
1 USB 2.0 (power port)
1 USB Type-C™
1 HDMI
1 headphone/microphone combo
1 AC power
1 RJ-45
1 VGA

450/470
1 USB 3.0
2 USB 2.0
1 USB Type-C™

Features

1 HDMI
1 headphone/microphone combo
1 AC power
1 RJ-45
1 VGA

NOTE: All cables are not included and sold separately.

Digital Media Slots
Multi Media Reader Slot
Supports SD, SDHC, SDXC

SERVICE AND SUPPORT

HP Services offers 3-year and 1-year limited warranties and 90-day software limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services [1,2] are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at http://www.hp.com/go/cpc.

1. Sold separately or as an optional feature.
2. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/cpc.

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	**Nominal Operating Voltage**	19 V
	Average Operating Power	Win 10
	ProBook 430 Integrated graphics	6.78W
	ProBook 440 Integrated graphics	6.78W
	Discrete graphics	4.49W
	ProBook 450 Integrated graphics	8.89W
	Discrete graphics	6.79W
	ProBook 470 Discrete graphics	5.71W
	Max Operating Power	Discrete < 65W UMA < 45W
Temperature	**Operating**	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	**Operating**	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	**Operating**	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	**Operating**	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	**Operating**	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	**UL**	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR 6.0®	Select models[1]
	EPEAT	Registered Gold in United States[2]
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes

Technical Specifications

UKRSERTCOMPUTER	Yes

1. Configurations of the HP ProBook 430 G4, HP ProBook 440 G4, HP ProBook 450 G4 and HP ProBook 470 G4 that are ENERGY STAR® qualified are identified as HP ProBook 430 G4 ENERGY STAR, HP ProBook 440 G4 ENERGY STAR, HP ProBook 450 G4 ENERGY STAR and HP ProBook 470 G4 ENERGY STAR on HP websites and on http://www.energystar.gov.
2. EPEAT® registration varies by country. See http://www.epeat.net for registration status by country. EPEAT status listed above applies to U.S. For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

DISPLAYS

Panel LCD 13.3 FHD AG WLED UWVA 45%cg 220nitsnits eDP Ultraslim 2.85mm	**Active Area (W x H)**	293.47 x 165.08 mm
	Dimensions (W x H)	306.8x195.7
	Diagonal Size	13.3 (inch)
	Thickness	2.85mm max.
	Weight	260 g max
	Interface	eDP 1.2
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	600:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution - Format	1920 x 1080 (FHD)
	Pixel Resolution - Configuration	RGB
	Backlight	LED
	Color Gamut Coverage	45%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	UWVA 85/85/85/85
	Touch Point Supported	N/A
	Other Features	N/A
	Pen Enabled	No

Panel LCD 13.3 HD AG WLED SVA 45%cg 220nits eDP Slim Touch	**Active Area (W x H)**	293.42 x 164.97 (mm)
	Dimensions (W x H)	314.6 x 189.2 (mm) max
	Diagonal Size	13.3 (inch)
	Thickness	3.0 (mm) max
	Weight	260 g max
	Interface	eDP 1.2
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	300:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution - Format	1366 x 768 (HD)
	Pixel Resolution - Configuration	RGB
	Backlight	LED

Technical Specifications

Color Gamut Coverage	45%
Color Depth	6 bits + Hi FRC
Viewing Angle	SVA 45/45/25/35
Touch Point Supported	10-point multi-touch
Other Features	AS
Pen Enabled	No

Panel LCD 14.0 FHD AG WLED SVA 45%cg 220nits eDP Slim	**Active Area (W x H)**	309.40 x 173.89 (mm)
	Dimensions (W x H)	320.9 x 205.6 (mm) max
	Diagonal Size	14 (inch)
	Thickness	3.0 (mm) max
	Weight	290 g max
	Interface	eDP 1.2
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	300:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution - Format	1920 x 1080 (FHD)
	Pixel Resolution - Configuration	RGB
	Backlight	LED
	Color Gamut Coverage	45%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	SVA 45/45/25/35
	Touch Point Supported	N/A
	Other Features	N/A
	Pen Enabled	No

Technical Specifications

Panel LCD 14.0 HD AG WLED SVA 45%cg 220nits eDP Slim Touch	**Active Area (W x H)**	309.40 x 173.95 (mm)
	Dimensions (W x H)	320.9 x 205.6 (mm) max
	Diagonal Size	14 (inch)
	Thickness	3.0 (mm) max
	Weight	290 g max
	Interface	eDP 1.2
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	300:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution - Format	1366 x 768 (HD)
	Pixel Resolution - Configuration	RGB
	Backlight	LED
	Color Gamut Coverage	45%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	SVA 40/40/15/30
	Touch Point Supported	10-point multi-touch
	Other Features	AS
	Pen Enabled	No

Panel LCD 15.6 FHD AG WLED SVA 45%cg 220nits eDP Slim	**Active Area (W x H)**	344.2 x 193.5 (mm)
	Dimensions (W x H)	360 x 224.3 (mm) max
	Diagonal Size	15.6 (inch)
	Thickness	3.2 (mm) max
	Weight	370 g max
	Interface	eDP 1.2
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	300:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution - Format	1920 x 1080 (FHD)
	Pixel Resolution - Configuration	RGB
	Backlight	LED
	Color Gamut Coverage	45%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	SVA 45/45/25/35
	Touch Point Supported	N/A
	Other Features	N/A

Technical Specifications

	Pen Enabled	No

Panel LCD 15.6 HD AG WLED SVA 45%cg 220nits eDP Slim Touch	**Active Area (W x H)**	344.2 x 193.5 (mm)
	Dimensions (W x H)	360 x 224.3 (mm) max
	Diagonal Size	15.6 (inch)
	Thickness	3.2 (mm) max
	Weight	370 g max
	Interface	eDP 1.2
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	300:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution - Format	1366 x 768 (HD)
	Pixel Resolution - Configuration	RGB
	Backlight	LED
	Color Gamut Coverage	45%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	SVA 45/45/25/35
	Touch Point Supported	10-point multi-touch
	Other Features	AS
	Pen Enabled	No

Panel LCD 17.3 FHD AG WLED UWVA 72%cg 300nits eDP Flat 4.0mm	**Active Area (W x H)**	381.89 x 214.81 (mm)
	Dimensions (W x H)	400 x 233.3 (mm) max
	Diagonal Size	17.3 (inch)
	Thickness	4.0 (mm) max
	Weight	550 g max
	Interface	eDP 1.3
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	600:1 (typical)
	Refresh Rate	60 Hz
	Brightness	300 nits
	Pixel Resolution - Format	1920 x 1080 (FHD)
	Pixel Resolution - Configuration	RGB
	Backlight	LED
	Color Gamut Coverage	72%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

	Touch Point Supported	N/A
	Other Features	N/A
	Pen Enabled	No

Panel LCD 17.3 HD+ AG WLED SVA 60%cg 220nits eDP Flat	**Active Area (W x H)**	382.08 x 214.92 (mm)
	Dimensions (W x H)	398.6 x 251 (mm) max
	Diagonal Size	17.3 (inch)
	Thickness	4.0 (mm) max
	Weight	550 g max
	Interface	eDP 1.3
	Surface Treatment	Anti-Glare (AG)
	Contrast Ratio	300:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution - Format	1600 x 900 (HD+)
	Pixel Resolution - Configuration	RGB
	Backlight	LED
	Color Gamut Coverage	60%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	SVA 45/45/25/35
	Touch Point Supported	N/A
	Other Features	N/A
	Pen Enabled	No

Technical Specifications

STORAGE AND DRIVES

HARD DRIVES

500 GB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.20 lbs (92 g) ~ 0.21 lbs (95 g)	
	Rotation Speed	5400 rpm	
	Cache Buffer	Up to 16 MB	
	NAND Type/Size	N/A	
	Height	0.28 in (7 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Interface Transfer Rate	600 MB/s	
	Seek Time	**Single Track**	1.5 ~ 2 ms
		Average	13 ~ 16 ms
		Maximum	18 ~ 22 ms
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	
	Security Features	ATA Security	
	Other Features	S.M.A.R.T., NCQ, Ultra DMA	
500 GB* 5400 rpm SMART SATA Hybrid HDD/SSHD	**Drive Weight**	0.20 lbs (92 g) ~ 0.21 lbs (95 g)	
	Rotation Speed	5400 rpm	
	Cache Buffer	64 MB	
	NAND Type/Size	TLC/8GB	
	Height	0.28 in (7 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Interface Transfer Rate	600 MB/s	
	Seek Time	**Single Track**	2 ms
		Average	12 ms
		Maximum	22 ms
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	
	Security Features	ATA Security	
	Other Features	S.M.A.R.T., NCQ, Ultra DMA	
500 GB* 7200 rpm SATA Hard Drive	**Drive Weight**	0.20 lbs (92 g) ~ 0.21 lbs (95 g)	
	Rotation Speed	7200 rpm	
	Cache Buffer	Up to 32 MB	
	NAND Type/Size	N/A	
	Height	0.28 in (7 mm)	

Technical Specifications

	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Interface Transfer Rate	600 MB/s	
	Seek Time	**Single Track**	2 ~ 1.5 ms
		Average	11 ~ 13 ms
		Maximum	18 ~ 22 ms
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	
	Security Features	ATA Security	
	Other Features	S.M.A.R.T., NCQ, Ultra DMA	
1TB* 5400 rpm 9.5mm SATA Hard Drive	**Drive Weight**	0.25 lbs (115 g) ~ 0.22 lbs (102 g)	
	Rotation Speed	5400 rpm	
	Cache Buffer	8 MB	
	NAND Type/Size	N/A	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Interface Transfer Rate	600 MB/s	
	Seek Time	**Single Track**	2 ms
		Average	13 ms
		Maximum	15 ~ 22 ms
	Logical Blocks	1,953,525,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	
	Security Features	ATA Security	
	Other Features	S.M.A.R.T., NCQ, Ultra DMA	
1TB* 5400 rpm 7mm SATA Hard Drive	**Drive Weight**	0.21 lbs (94 g)	
	Rotation Speed	5400 rpm	
	Cache Buffer	Up to 32 MB	
	NAND Type/Size	N/A	
	Height	0.28 in (7.2 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Interface Transfer Rate	600 MB/s	
	Seek Time	**Single Track**	2 ms
		Average	12 ~ 13 ms
		Maximum	18 ~ 22 ms
	Logical Blocks	1,953,525,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	

Technical Specifications

	Security Features	ATA Security
	Other Features	S.M.A.R.T., NCQ, Ultra DMA

2TB 5400 rpm 9.5mm SATA Hard Drive	**Drive Weight**	0.29lbs (130 g)	
	Rotation Speed	5400 rpm	
	Cache Buffer	32 MB	
	NAND Type/Size	N/A	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Interface Transfer Rate	600 MB/s	
	Seek Time	**Single Track**	2 ms
		Average	12 ms
		Maximum	22 ms
	Logical Blocks	3,907,029,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	
	Security Features	ATA Security	
	Other Features	S.M.A.R.T., NCQ, Ultra DMA	

SOLID STATE DRIVES

Technical Specifications

SOLID STATE DRIVES

SSD 128GB 2280 M2 SATA-3 Value	**Form-Factor (I/O)**	M.2 2280
	Capacity	128 GB
	NAND Type	TLC
	Weight	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	ATA-8, SATA 3.0
	Sequential Read (Up to MB/s)	513 ~ 535
	Sequential Write (Up to MB/s)	136 ~ 515
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Security Features	ATA Security
	Other Features	DIPM; TRIM; DEVSLP

SSD 256GB 2280 M2 SATA-3 Value	**Form-Factor (I/O)**	M.2 2280
	Capacity	256 GB
	NAND Type	TLC
	Weight	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	ATA-8, SATA 3.0
	Sequential Read (Up to MB/s)	520 ~ 530
	Sequential Write (Up to MB/s)	330 ~ 450
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Security Features	ATA Security
	Other Features	DIPM; TRIM; DEVSLP

Optical Drives

DVD+/-RW SuperMulti DL Drive	**Access Times**	**Random**	<140ms CD (typical) < 160ms DVD (typical)
	Weight	150g max.	
	Max Data Transfer Rate	24X CD-ROM 8X DVD-ROM 24X CD-R 10X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 6X - DVD+R Dual Layer 6X - DVD-R Dual Layer 5X DVD-RAM	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	
DVD-ROM Drive	**Access Times**	**Random**	< 140ms CD (typical) < 160ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X-DVD	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	None	
	Max Media Capacity (read)	8.5GB	

Technical Specifications

Transport	Tray Loading

SECURITY

HP Synaptics Fingerprint Reader (optional)	**Mobile Voltage Operation**	3.0V-3.6V Single Supply
	Operating Temperature	32° – 158°F (0° – 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	200 pixel wide fingerpring image 16.5 mm x 3 mm sensor area 508 dpi resolution, 256 levels of grayscale

NETWORKING/COMMUNICATIONS

WWAN

HP lt4132 LTE/HSPA+ 4G Mobile Broadband Module	**Technology/Operating bands**	LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3) MHz, 850 (Band 5), 2600 (Band 7), 900 (Band 8) MHz, 800 (Band 20), 700 (Band 28) MHz. HSPA+: 2100 (Band 1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz
	Wireless protocol standards	3GPP Release 10 LTE Specification CAT.4, 20MHz BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification E-GPRS: Class B, Multi-slot class 12, coding schemes CS1 - CS4 and MSC1 - MSC9
	GPS	Standalone, A-GPS (MS-B and LTO)
	GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
	Maximum data rates	LTE: 150 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)
	Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm E-GPRS 1900/1800: 26 dBm E-GPRS 900/850: 27 dBm GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm
	Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,600 mA (peak); 500 mA (average)
	Form Factor	M.2, 3042-S3 Key B
	Weight	6 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

Technical Specifications

* Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

WLAN

Realtek 802.11 b/g/n (1x1) + Bluetooth® Combo	**Wireless LAN Standards**	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n • 2.402 – 2.482 GHz **Note:** The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS 0 ~ MCS 07, (20MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM,
	Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +13dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +12dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum
	Power Consumption	Transmit: 2.0 W (max)

Technical Specifications

	Receive: 1.6 W (max)	
	Idle mode (PSP): 180 mW (WLAN Associated)	
	Idle mode: 60 mW (WLAN unassociated)	
	Radio disabled: 30 mW	
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum	
	802.11b, 11Mbps : -86dBm maximum	
	802.11g, 6Mbps : -88dBm maximum	
	802.11g, 54Mbps : -74dBm maximum	
	802.11a, 6Mbps : -86dBm maximum	
	802.11a, 54Mbps : -72dBm maximum	
	802.11n, MCS07 : -69dBm maximum	
	802.11n, MCS15 : -66dBm maximum	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure	
	Two embedded 2.4 GHz antennas are provided to the card to support WLAN and Bluetooth communications (Support Dual antenna or Single antenna, depend on platform requirement)	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
	Or Type 1630 : 2.3 x 16.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
	Or	
	Type 1630 : 2g	
Operating Voltage	3.3v +/- 9%	
Temperature	**Operating**	14° to 158° F (–10° to 70° C)
	Non-operating	–40° to 176° F (–40° to 80° C)
Humidity	**Operating**	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	**Operating**	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON	

1. Check latest software/driver release for updates on supported security features.

2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Intel 802.11 a/b/g/n/AC (1x1) Bluetooth® Combo	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n • 2.402 – 2.482 GHz Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels. 802.11a/n • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz Note: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)
	Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS7, (1SS) (20MHz, 40MHz, and 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)

Technical Specifications

Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum • 802.11ac 80MHz(5GHz) : +11dBm minimum
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g Or Type 1630 : 2g
Operating Voltage	3.3v +/- 9%
Temperature	**Operating** 14° to 158° F (–10° to 70° C) **Non-operating** –40° to 176° F (–40° to 80° C)
Humidity	**Operating** 10% to 90% (non-condensing) **Non-operating** 5% to 95% (non-condensing)
Altitude	**Operating** 0 to 10,000 ft (3,048 m) **Non-operating** 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON

4. Check latest software/driver release for updates on supported security features.

5. Maximum output power may vary by country according to local regulations.
6. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Intel 802.11 a/b/g/n/AC (2x2) Bluetooth® 4.2 Combo	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n • 2.402 – 2.482 GHz **Note:** The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels. 802.11a/n • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz **Note:** Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)
	Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS7, (1SS) (20MHz, 40MHz, and 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points

Technical Specifications

Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum • 802.11ac 80MHz(5GHz) : +11dBm minimum
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g Or Type 1630 : 2g
Operating Voltage	3.3v +/- 9%
Temperature	**Operating** 14° to 158° F (–10° to 70° C) **Non-operating** –40° to 176° F (–40° to 80° C)
Humidity	**Operating** 10% to 90% (non-condensing) **Non-operating** 5% to 95% (non-condensing)
Altitude	**Operating** 0 to 10,000 ft (3,048 m) **Non-operating** 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.

3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.

Intel® 802.11 a/b/g/n/ac (2x2) +Bluetooth® 4.2 Combo

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n • 2.402 – 2.482 GHz **Note:** The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels. 802.11a/n • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz **Note:** Indonesia no support this band
Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
Modulation	Direct Sequence Spread Spectrum

Technical Specifications

	BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
Network Architecture	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm

Technical Specifications

Weight	Type 2230 : 2.8g Or Type 1630 : 2g	
Operating Voltage	3.3v +/- 9%	
Temperature	**Operating** **Non-operating**	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	**Operating** **Non-operating**	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	**Operating** **Non-operating**	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2 Compliant
Frequency Band	2402 to 2480 MHz
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Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.

COMMUNICATIONS

Realtek Ethernet (10/100/1000)	**Ethernet Features**	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	Power Management	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption

Technical Specifications

	Advanced link down power saving for reducing link down power consumption
Performance Features	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling
Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
Interface	PCI Express 1.1to fully support ASPM L0s/L1 and CLKREQ
NIC Device Driver Name	Realtek PCIe GBE Ethernet Family Controller

Technical Specifications

AUDIO/MULTIMEDIA

Hardware	**Implementation**	Conexant CX7700
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array
Audio Output Quality	**Frequency Response**	20Hz – 20kHz
	Signal to Noise Ratio	106 dB (DAC), 102dB (ADC)
	Total Harmonic Distortion	91dB THD+n on Line Out/HP (0.003%)
	Play Sampling Rate(s)	Up to 192kHz
	Record Sampling Rate(s)	Up to 96Khz
	DAC	16, 20 or 24-bit
	ADC	16, 20 or 24-bit
Integrated Stereo Speakers	**Power Rating**	2 Watts
	Impedance	4 Ohms

POWER

HP 45W Smart AC Adapter	**Dimensions (H x W x D)**	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)	
	Weight	0.386 lb (175g) max	
	Input	90 to 265 VAC	
		Input Efficiency	87.74% at 115Vac and 88.4% at 230Vac
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC
	Output	**Output power**	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8.0A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 16,400 ft (0 to 5,000 m)
		Humidity	20% to 95%

Technical Specifications

		Storage Humidity	10% to 95%
	EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

HP 65W AC Adapter, nPFC 3Pin RC 4.5mm	**Dimensions**	4.25 x 1.85 x 1.47 in (10.8 x 4.7 x 3.74 cm)	
	Weight	1.81 lb (250g) max	
	Input	100 to 240 VAC	
		Input Efficiency	88% min at 115 VAC and 89% min at 230 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
	Output	**Output power**	65W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

65W 3-prong AC Adapter (EM Model)	**Dimensions**	4.96 x 1.96 x 1.18 in (12.6cmx5.0cmx3.0cm)	
	Weight	1.65 lb (275g) max	
	Input	**Input Voltage**	90V to 264V
		Input Efficiency	87% min at 115V/230V
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC and maximum load

Technical Specifications

	Output	**Output power**	65W(19.5V/3.33A) ; 7.5W(5V/1.5A)
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	0° to 35° C
		Non-operating (storage) temperature	-20° to 85° C
		Altitude	0 to 5,000 m
		Humidity	0% to 95%
		Storage Humidity	0% to 95%
	Safety Certifications	CE Mark - EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; Reliability - failure rate of less than 0.1% annually within the first three years of operation.	

HP 3-cell, Long Life 48 WHr Li-ion HP ProBook 430 /440/450/470 G4	**Dimensions** (H x W x L)	7.0. x180.48x88.95 mm (0.273 x 7.09 x 3.49 inch)	
	Weight	0.22 kg (0.48lb)	
	Cells/Type	3cell Lithium-Ion	
	Energy	**Voltage**	11.4V/ 10.95V
		Amp-hour capacity	4.212Ah /4.385Ah
		Watt-hour capacity	48Wh
	Temperature	**Operating (Charging)**	32˚ to 113˚ F (0˚ to 45˚ C)
		Operating (Discharging)	14˚ to 122˚ F (-10˚ to 60˚ C)
		Non-operating	-4˚ to 122˚ F (-20˚ to 60˚ C)
	Battery Re-Charge Time	**System in OFF or Standby Mode**	<3 hours
	Fuel Gauge LED	No	
	Warranty	1-year*	
	Optional Travel Battery Available	No	

*Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform.

Country of Origin

ENVIRONMENTAL

ProBook 430 G4

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT <Gold> registered in the United States. See http://www.epeat.net for registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook".

Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	6.85 W	6.99 W	6.85 W
Normal Operation (Long idle)	3.22 W	3.42 W	3.31 W
Sleep	0.51 W	0.55 W	0.52 W
Off	0.31 W	0.42 W	0.30 W

Note:
Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	23 BTU/hr	24 BTU/hr	23 BTU/hr
Normal Operation (Long idle)	11 BTU/hr	12 BTU/hr	11 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	2 BTU/hr	1 BTU/hr	1 BTU/hr

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd}, bels)	Sound Pressure (L_{pAm}, decibels)
Typically Configured – Idle	2.8	15
Fixed Disk – Random writes	2.8	15

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 3 USB ports
- 1 PC card slot (type I/II)
- 1 ExpressCard/54 slot

Technical Specifications

- 1 IEEE 1394 Port
- 2 SODIMM memory slots
- Optional expansion base docking station
- 1 multi-bay II storage port
- Interchangeable HDD??

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:
Mercury greater the1ppm by weight
Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)
Battery type: Lithium

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the <Gold> level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0% post-consumer recycled plastic (by wt.)
- This product is 94.7% recycle-able when properly disposed of at end of life.

Packaging Materials

External:	PAPER/Corrugated	340.5 g
Internal:	PLASTIC/EPE-Expanded Polyethylene	49 g
	PLASTIC/Polyethylene low density	9.1 g

The plastic packaging material contains at least 0% recycled content.
The corrugated paper packaging materials contains at least 80.0% recycled content.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes

- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Technical Specifications

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Eco-label certifications
http://www8.hp.com/us/en/hp-information/environment/ecolabels.html
ISO 14001 certificates:
http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842
and
http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

ProBook 440 G4

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT <Gold> registered in the United States. See http://www.epeat.net fo registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook".

Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	4.92 W	4.93 W	4.91 W
Normal Operation (Long idle)	2.33 W	2.25 W	2.29 W
Sleep	0.38 W	0.40 W	0.34 W
Off	0.19 W	0.24 W	0.190 W

Note:
Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

ProBook 450 G4

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT <Gold> registered in the United States. See http://www.epeat.net for registration status in your country.

Technical Specifications

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	5.57 W	5.82 W	5.72 W
Normal Operation (Long idle)	3.07 W	3.12 W	2.92 W
Sleep	0.50 W	0.53 W	0.50 W
Off	0.17 W	0.25 W	0.17 W

Note:
Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

ProBook 470 G4

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT <Gold> registered in the United States. See http://www.epeat.net for registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

Energy Consumption (in accordance with US ENERGY STAR® test method)

	115VAC, 60Hz	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	8.12 W	8.16 W	8.09 W
Normal Operation (Long idle)	3.12 W	3.14 W	3.11 W
Sleep	0.34 W	0.40 W	0.33 W
Off	0.18 W	0.27 W	0.17 W

Technical Specifications

Note:
Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Options and Accessories (sold separately and availability may vary by country)

Type	Decription	Part Number
Docking	HP 3001pr USB 3 Port Replicator	F3S42AA
	HP 3005pr USB 3.0 Port Replicator	Y4H06AA
Input/Output	HP Stylish USB Keyboard and Mouse	H4B80AA#xxx
	HP Stylish Wireless Keyboard and Mouse	H4B79AA#xxx
	HP Slim BT Keyboard	H4Q44AA#xxx
	HP USB Essential Keyboard and Mouse	H6L29AA
	HP 2.4 GHz Keyboard and Mouse	G1K29AA#xxx
	HP Ultra Mobile Wireless Mouse	H6F25AA#xxx
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Travel Mouse	G1K28AA
	HP Ultrathin Wireless Mouse SE	L9V77AA
	HP Ultrathin Wireless Mouse	L9V78AA
	HP HDMI to DVI Adapter	F5A28AA
	HP Wireless Display Adapter	J1V25AA#xxx
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
Power	HP 65W Smart AC Adapter	H6Y89AA#xxx
	HP 90W Smart AC Adapter	H6Y90AA#xxx
	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP Power Bank	N9F71AA#xxx
Storage	HP External USB Optical Drive	F2B56AA
	HP 500GB 7200rpm HDD	F3B97AA
Security	HP UltraSlim Keyed Cable Lock	H4D73AA
	HP Essential Combination Lock	T0Y16AA
	HP Combination Lock	T0Y15AA
	HP Keyed Cable lock	T0Y14AA
	HP Keyed Cable Lock 10mm	T1A62AA
UCC	HP Conferencing Keyboard	K8P74AA#xxx
	HP Speaker Phone	K7V16AA
	HP Wired Headset	K7V17AA

Summary of Changes

Date of change:	Version History:		Description of change:
September 27, 2016	Version 1 to 2	Changed	BT Standards
October 18, 2016	Version 2 to 3	Added	Environmental Data on HP ProBook 430 G4 Notebook PC
October 19, 2016	Version 3 to 4	Added	430/440/450 G4 processors information was added to the Processors section. Skype for Business certification information added to the Software section.
November 22, 2016	Version 4 to 5	Changed	Changed from Skype for Business Certified to Certified for Skype for Business, under Microsoft Products section.
December 21, 2016	Version 5 to 6	Updated	Processors specs updated
January 26, 2017	Version 6 to 7	Updated	Processors Section updated
March 9, 2017	Version 7 to 8	Updated	Updated Note in Operating System and Processor sections
April 4, 2017	Version 8 to 9	Added	Processors family added and Battery Warranty updated
April 17, 2017	Version 9 to 10	Updated	Display Section updated

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